



Johnson County, Kansas Cooperating Technical Partners Mapping Activity Statement

Statement #2 –Digital Flood Insurance Rate Map (DFIRM) Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Memorandum of Agreement dated April 19, 2001, between Johnson County, Kansas and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement #2 is as follows:

- 1. Statement Objective and Scope:** The objective of this Mapping Activity for Johnson County, Kansas is to develop a new or updated Digital Flood Insurance Rate Map(s) (DFIRM) and Flood Insurance Study (FIS) report(s) for Johnson County. The FIS and DFIRM will be produced in countywide DFIRM format.

Additionally, this project will include developing new and/or updated flood hazard data, as summarized in the following table:

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Detailed Coastal			Redelin-eation of SFHAs Using Effective Profiles	Refine/ Establish Zone A
			Hydrology	Hydraulics	Stillwater	Wave Height	Wave Runup	Erosion	
Blue River Watershed	Up to 160 acres drainage	116.7 miles	X	X					
Mill Creek Watershed	Up to 160 acres drainage	122.2 miles	X	X					
Cedar Creek Watershed	Up to 160 acres drainage	92.0 miles	X	X					
Northeast Turkey Creek Rock Creek Brush Creek Lake Quivira Dykes Branch	Up to 160 acres drainage	22.5 miles 6.4 miles 8.5 miles 5.7 miles 6.6 miles	X	X					
Indian Creek Watershed Indian Creek James Branch	Up to 160 acres drainage	56.3 miles 1.7 miles	X	X					
Kill Creek Captain Creek	Up to 160	96.0 miles 44.7 miles	X	X					

Watershed	acres drainage									
Marais des Cygnes River Watershed	Up to 160 acres drainage	133.0 miles	X	X						

This project will be completed by the Mapping Partners listed below:

Johnson County
Mapping Coordination Contractor

The activities, and who will complete them, are summarized in the table below.

The following sections describe the specific mapping activities associated with this mapping project. Each activity description identifies the responsible Mapping Partners, the Standards that must be met, and resultant map component.

Activity	CTP (Johnson County)	MCC	
Activity 1 – Field Surveys and Reconnaissance	X		
Activity 2 – Topographic Data Development	X		
Activity 3 – Independent QA/QC of Topographic Data		X	
Activity 4 –Hydrology	X		
Activity 5–Independent QA/QC of Hydrology		X	
Activity 6 – Hydraulics	X		
Activity 7 – Independent QA/QC of Hydraulics		X	
Activity 8 – Floodplain Mapping (Detailed Riverine Analysis)	X		
Activity 8A – Floodplain Mapping (Redelineation Using Effective Profiles)		N/A	
Activity 8B – Floodplain Mapping (Refine/Establish Zone A)		N/A	
Activity 9 – Independent QA/QC of Floodplain Mapping		X	
Activity 10 – Base Map Acquisition and Preparation	X		
Activity 11 – DFIRM Production (Non-Revised Areas)		X	
Activity 11A – Independent QA/QC of DFIRM Production (Non-Revised Areas)		N/A	
Activity 12 – Merge Effective and Revised Information		X	
Activity 12A – Apply DFIRM Graphic Specifications		X	
Activity 12B – Independent QA/QC of DFIRM Graphics		N/A	
Activity 13 – Issue Preliminary FIS and FIRM		X	
Activity 14 – Post-Preliminary Processing		X	

Activity 1 - Field Surveys and Reconnaissance

Responsible Mapping Partner: Johnson County, Kansas

Scope: To supplement any field reconnaissance conducted during the scoping phase of this Flood Map Project, Johnson County, Kansas shall conduct a detailed field reconnaissance of the specified study area to determine conditions along the floodplain(s), types and numbers of hydraulic and/or flood-control structures, apparent maintenance status of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses. In addition to the initial field reconnaissance, this activity includes conducting field surveys, including obtaining channel and floodplain cross sections, identifying or establishing temporary bench marks (ERMs), and obtaining the physical dimensions of hydraulic and flood-control structures. Johnson County, Kansas is responsible for coordinating with other team members collecting topographic data under Activity 2.

Standards: Work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the Technical Support Data Notebook (TSDN) format described in Section 2, Johnson County, Kansas shall make the following products available to FEMA:

- A report summarizing the findings of the field reconnaissance;
- Maps and drawings that provide the detailed survey results; and
- Survey notebook containing cross sections and structural data.

Activity 2 - Topographic Data Development

Responsible Entity: Johnson County, Kansas

Scope: To supplement the field surveys conducted under Activity 1, new topographic data must be developed and submitted in digital format to delineate floodplain boundaries. Specifically, new topographic data shall be generated for the entire county using aerial photography.

Contour interval and/or accuracy for the topographic data shall be selected based on the existing FEMA guidelines and specifications. The vertical datum will be NAVD 1988.

This Activity also consists of developing topographic maps and/or Digital Elevation Models (DEMs) for the subject flooding sources using the data collected in Activity 1. Unless directed to do otherwise by FEMA, new topographic data must be developed and submitted in digital format. Upon completion of topographic data collection and processing for the entire county, this data shall be submitted to the Mapping Coordination Contractor for an independent Quality Assurance/Quality Control (QA/QC) review under Activity 3. Data for the remaining flooding sources shall be submitted for an independent QA/QC review at the completion of this Activity. Johnson County, Kansas shall be responsible for addressing concerns or questions regarding this Activity raised during the QA/QC review outlined in Activity 3.

Standards: Work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, Johnson County, Kansas shall make the following products available to FEMA.

- Completed Form No. 1 of *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2). Complete set of MT-2 forms are available from FEMA web site at http://www.fema.gov/mit/tsd/DL_MT-2.htm;
- Report summarizing methodology and results;
- Mass points and breaklines data on CD-ROM;
- Digital workmap with contours;
- Checkpoint analyses to assess the accuracy of data including Root Mean Square Error (RMSE) calculations to support vertical accuracy;
- Identification of remote-sensing data voids and methods used to supplement data voids;
- National Geodetic Survey (NGS) data sheets for Network Control Points (NCPs) used to control remote sensing and ground surveys;
- Metadata compliant with Federal Geographic Data Committee standards;
- Data sheets for Johnson County HARN benchmarks used to control remote sensing and ground surveys. A digital file with HARN benchmark locations shall also be provided for inclusion on the FIRM.

Activity 3 - Independent QA/QC of Topographic Data

Responsible Entity: Mapping Coordination Contractor

Scope: The Mapping Coordination Contractor shall review the mapping data generated by Johnson County, Kansas under Activity 2 of this Mapping Activity Statement to ensure that these data are consistent with FEMA standards as well as standard engineering practice and are sufficient to prepare or revise the FIRM.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the Mapping Coordination Contractor shall make the following products available to FEMA.

- A Summary Report that describes the findings of the independent QA/QC review.
- Recommendations to resolve any problems that arise as a result of the independent QA/QC review.

Activity 4 - Hydrology

Responsible Entity: Johnson County, Kansas

Scope: Hydrologic analyses shall be completed for approximately 475 square miles of drainage area for the flooding source(s) listed in Section 1 of this Mapping Activity Statement. The hydrologic methods used for this analysis shall be HEC-1. Peak flood discharges shall be calculated for the 10%, 2%, 1% and 0.2% annual chance storm events for existing conditions and the 1% annual chance storm event for ultimate conditions. These flood discharges shall be the basis for subsequent hydraulic analyses of the subject flooding source(s). In addition, Johnson County, Kansas shall be responsible for addressing concerns or questions regarding this Activity raised during the QA/QC review outlined in Activity 5.

Standards: Work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of hydrologic modeling for:

Blue River - 75.5 square miles

Mill Creek - 62.5 square miles

Cedar Creek - 59.6 square miles

Indian Creek – Indian Creek, 39.6 square miles and James Branch, 1.2 square miles

Northeast - Turkey Creek, 20.1 square miles; Rock Creek, 4.5 square miles; Brush Creek, 8.2 square miles; Dykes Branch, 4.8 square miles; and Lake Quivira, 4.6 square miles

Captain/Kill – 83 square miles

Marais des Cygnes – 83 square miles

Johnson County, Kansas shall utilize the USGS regression equations as a check for reasonableness of flows and shall submit the results of these checks. Johnson County, Kansas shall submit the results to the Mapping Coordination Contractor for an independent QA/QC review as described in Activity 5. Johnson County, Kansas shall submit the results for the remaining flooding sources for an independent QA/QC review at the completion of this Activity.

In accordance with the TSDN format described in Section 2, Johnson County, Kansas shall make the following products available to FEMA.

- Digital copies of hydrologic modeling (input and output) files for 10%, 2%, 1% and 0.2% annual chance storm events for existing conditions and the 1% annual chance storm event for ultimate conditions.
- Digital version of the "Summary of Discharges" table(s) presenting discharge data for each flooding source.
- Digital version of the draft text for Section 3.1, Hydrologic Analyses, of FIS report.
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- Backup data used in the analysis, including work maps

Activity 5 - Independent QA/QC Review of Hydrologic Analyses

Responsible Entity: Mapping Coordination Contractor

Scope: The Mapping Coordination Contractor shall review the technical, scientific, and other information submitted by Johnson County, Kansas under Activity 4 of this Mapping Activity Statement to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to revise the FIRM. This work will include, at a minimum, the following activities:

- Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on:
 - Use of acceptable models;
 - Use of appropriate methodology(ies);
 - Correctly applied methodology(ies)/model(s), including QC of input parameters;
 - Comparison with gage data and/or regression equations, if appropriate; and
 - Comparison with discharges for contiguous reaches or flooding sources.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review. All supporting data should be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, MAPPING COORDINATION CONTRACTOR shall make the following products available to FEMA.

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that arise as a result of the QA/QC review.

Activity 6 – Hydraulic Analyses

Responsible Entity: Johnson County, Kansas

Scope: Johnson County, Kansas shall perform hydraulic analyses for:

Blue River - 116.7 miles

Mill Creek - 122.2 miles

Cedar Creek – 92.0 miles

Indian Creek – Indian Creek, 56.3 miles and James Branch, 1.7 miles

Northeast - Turkey Creek, 22.5 miles; Rock Creek, 6.4 miles; Brush Creek, 8.5 square miles; Dykes Branch, 6.6 miles; and Lake Quivira, 5.7 miles

Captain/Kill – Captain Creek, 96.0 miles and Kill Creek, 44.7 miles

Marais des Cygnes River – 133.0 miles

The modeling shall include the 10%, 2%, 1% and 0.2% annual chance storm events for existing conditions and the 1% annual chance storm event for ultimate conditions based on peak discharges computed under Activity 4. The hydraulic methods used for this analysis shall include HEC-RAS. Johnson County, Kansas shall use cross-section and field data collected under Activity 1 to perform the hydraulic analyses. The hydraulic analyses shall be used to establish flood elevations and regulatory floodways for the subject flooding sources. Johnson County, Kansas shall use FEMA's CHECK-RAS application to check the reasonableness of hydraulic analyses. To facilitate the independent QA/QC review under Activity 7, Johnson County, Kansas shall provide an explanation for each unresolved message from the CHECK-RAS program as appropriate. In addition, Johnson County, Kansas shall address concerns or questions regarding this Activity raised during the independent QA/QC review under Activity 7.

Standards: Work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of hydraulic modeling for Blue River, Mill Creek, Cedar Creek, Indian Creek (Indian Creek and James Branch), Northeast (Turkey Creek, Rock Creek, Brush Creek, Dykes Branch, and Lake Quivira) and Captain/Kill (Captain Creek, and Kill Creek), and Marais des Cygnes River, Johnson County, Kansas shall submit the results to the Mapping Coordination Contractor for an independent QA/QC review as described in Activity 7.

In accordance with the TSDN format described in Section 2, Johnson County, Kansas shall make the following products available to FEMA:

- Digital profiles of the 10%, 2%, 1% and 0.2% annual chance water-surface elevations for existing conditions and the 1% annual chance water-surface elevations for ultimate conditions representing existing conditions using FEMA's RASPLLOT program or similar software;
- Digital version of the Floodway Data Table(s) for each subject flooding source. The Floodway Data Table(s) must be compatible with the DFIRM database;
- Digital copies of hydraulic modeling (input and output) files;
- Digital version of table with range of Manning's "n" values
- An explanation for each unresolved message from CHECK-RAS program as appropriate;
- Backup data used in the analyses;
- Digital version of draft text for inclusion in Section 3.2, Hydraulic Analyses, of FIS report.

Activity 7 - Independent QA/QC Review of Hydraulic Analyses

Responsible Entity: Mapping Coordination Contractor

Scope: The Mapping Coordination Contractor shall review the technical, scientific, and other information submitted by Johnson County, Kansas under Activity 6 of this Mapping Activity Statement to ensure that the data and modeling are consistent with FEMA standards and standard engineering practices and are sufficient to revise the FIRM. This independent QA/QC review of the hydraulic analyses will include, at a minimum, the following activities:

- Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on:
 - Use of acceptable models;
 - Starting water-surface elevations;
 - Cross section geometry;
 - Manning's "n" values and expansion/contraction coefficients;
 - Bridge and culvert modeling;
 - Discharges;
 - Regulatory floodway computation methods; and
 - Tie-in to upstream and downstream non-revised profiles.
- Use the CHECK-RAS program to flag potential problems and focus review efforts.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydraulic modeling review.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the Mapping Coordination Contractor shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review and
- Recommendations to resolve any problems that arise as a result of the independent QA/QC review.

Activity 8 – Floodplain Mapping (Detailed Riverine Analysis)

Responsible Entity: Johnson County, Kansas

Scope: Johnson County, Kansas shall delineate digital floodplain and regulatory floodway boundaries for the flooding sources listed in Section 1 of this Mapping Activity Statement. The mapping shall incorporate the revised hydraulic modeling and newly acquired topographic information. Johnson County, Kansas shall delineate the floodplain boundaries for the 1% existing conditions and the 1% ultimate conditions recurrence intervals and the regulatory floodway on a digital work map based on existing topography or topographic data developed under Activity 2 of this Mapping Activity Statement, which shall be the basis of the revised FIRM. Johnson County, Kansas shall provide an explanation for selecting an existing topographic map if one is used for the floodplain boundary delineation. Johnson County, Kansas shall incorporate the results of the effective Letters of Map Change as appropriate. In addition, Johnson County, Kansas shall address concerns or questions regarding this Activity raised during the independent QA/QC review outlined in Activity 9.

Standards: Work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of floodplain mapping for Blue River, Mill Creek, Cedar Creek, Indian Creek (Indian Creek and James Branch), Northeast (Turkey Creek, Rock Creek, Brush Creek, Dykes Branch, and Lake Quivira) and Captain/Kill (Captain Creek, and Kill Creek), and Marais des Cygnes River, Johnson County, Kansas shall submit the results to the Mapping Coordination Contractor for an independent QA/QC review under Activity 9.

In accordance with the TSDN format described in Section 2, Johnson County, Kansas shall make the following products available to FEMA:

- Digital work maps with the 1% existing conditions annual chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, Base Flood Elevations (BFEs), zone designation labels, and applicable base map features;
- Digital work maps with the 1% future conditions annual chance floodplain boundary delineations
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including the required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- A QA/QC report that includes a description and the results of the automated and/or manual QA/QC steps taken during the preparation of the DFIRM; and
- Backup or supplemental information used in the mapping required for the independent QA/QC review outlined in Activity 9.

Activity 8A – Floodplain Mapping (Redelineation Using Effective Profiles and Updated Topographic Data)

This activity is not applicable.

Activity 8B – Floodplain Mapping (Refinement or Creation of Zone A)

This activity is not applicable

Activity 9 - Independent QA/QC Review of Floodplain Mapping

Responsible Entity: Mapping Coordination Contractor

Scope: The Mapping Coordination Contractor shall review the floodplain work maps submitted by Johnson County, Kansas under Activities 8, 8A, and 8B of this Mapping Activity Statement to ensure that the results of the hydraulic analyses are accurately represented on the work maps. This work will include, at a minimum, the following activities:

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain boundaries for agreement with the flood elevations shown in the Floodway Data Table and the contour lines and other topographic information shown on the work maps.
- Floodplain widths at cross section must match floodway data table. Floodplain boundaries as shown on work maps match profiles
- Ensure zone designations are indicated properly.
- Ensure DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's DFIRM Specifications and conform to those specifications for content and attribution.
- Ensure metadata files describing the DFIRM data include the required information and follow the examples shown in FEMA's DFIRM Specifications.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the Mapping Coordination Contractor shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results; and
- An annotated work map with all questions and/or concerns indicated if necessary.

Activity 10 - Base Map Acquisition and Preparation

Responsible Entity: Johnson County, Kansas

Scope: This is a required activity when Activities 8, 8A, 8B, and 11 are performed. This activity consists of obtaining the digital base map for the project. Johnson County, Kansas shall:

- Obtain digital files (raster) of the base map;
- The raster image shall be derived from Johnson County, Kansas' vector base map or from the raster aerial photography;
- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge;
- Certify that the digital data meet the minimum standards and specifications that FEMA requires for DFIRM production; and
- Populate the DFIRM database for base map features and applicable data.

Standards: Work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, Johnson County, Kansas shall make the following products available to FEMA.

- Written certification that the digital data meet the minimum FEMA standards and specifications; and
- Documentation that FEMA can use the digital base map.

Activity 11 - DFIRM Production (Non-Revised Areas)

Responsible Entity: Mapping Coordination Contractor

Scope: For all watersheds except Blue River, Mill Creek, Cedar Creek, Northeast, and Indian Creek, the Mapping Coordination Contractor will convert the effective FIRM/FBFM panels to digital format in conformance with FEMA's DFIRM specifications. The conversion will include Kill/Captain Creek, Marais des Cygnes River and Tomahawk Creek watersheds. The Mapping Coordination Contractor will use the base map acquired under Activity 10 of this Mapping Activity Statement for the conversion. The scope of this Activity covers the digitization of approximately 37 FIRM panels and no FBFM panels. The Mapping Coordination Contractor also will incorporate LOMCs issued by FEMA since the current effective FIRM for each affected community. The digital flood theme for the flooding sources specified in Section 1 will not be digitized as part of this Activity; rather, the Mapping Coordination Contractor will leave these as "holes" in the digital flood theme that will be filled in as part of Activity 12 using digital flood data from Activities 8, 8A, and/or 8B.

A CADD DFIRM for Johnson County, Kansas is available for the DFIRM production of the non-revised areas.

As part of the DFIRM production, the vertical datum for the non-revised flood sources will be converted to NAVD 1988.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the Mapping Coordination Contractor shall make the following products available to FEMA.

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including the required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of the DFIRM panels showing all unrevised flood hazard information taken from the effective FIRMs and FBFMs at a suitable scale; and
- A QA/QC report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRMs, including a check that the road and floodplain relationship is maintained for all unrevised areas.

Activity 11A - Independent QA/QC Review of DFIRM Production (Non-Revised Areas)

- This activity is not applicable.

Activity 12 – Merging of Revised and Non-Revised Information

Responsible Entity: Mapping Coordination Contractor

Scope: Upon completion of the Floodplain Mapping activity (Activity 8) for the revised flooding sources and the Digital FIRM Production activity (Activity 11) for non-revised flooding sources, the digital floodplain data will be merged into a single, updated Digital FIRM. This work will include tie-in of flood hazard information with contiguous communities that were not studied as part of this project. Also, the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries will be tied-in. The Mapping Coordination Contractor will coordinate with the Mapping Partners conducting Activities 8 and 11, as necessary, to resolve any potential tie-in issues.

Activity 12 will have two phases. The first phase includes merging the revised flood hazard information from the Blue River, Mill Creek, Cedar Creek, Northeast, and Indian Creek watershed studies with the effective flood hazard data from the non-revised areas. The merged DFIRM will then move through preliminary and post-preliminary processing.

The second phase will include merging revised data from the Kill/Captain Creek and Marais des Cygnes River watersheds with the effective flood hazard data from phase 1 for the non-revised area.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the Mapping Coordination Contractor shall make the following products available to FEMA.

- Digital work maps, with 1% and 0.2% existing conditions or 1% ultimate conditions annual chance floodplain boundary delineations, cross sections, BFEs, zone designation labels, and all applicable base map features shown;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*, provided on CD-ROM;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the DFIRM.

Activity 12A – Application of DFIRM Graphic Specifications

Responsible Entity: Mapping Coordination Contractor

Scope: Upon completion of merging of effective and revised floodplain mapping into a single, updated DFIRM (Activity 12), the Mapping Coordination Contractor shall apply the final FEMA DFIRM graphic specifications to the DFIRM mapping files. This work will include adding all required annotation, line patterns, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user).

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the Mapping Coordination Contractor shall make the following products available to FEMA.

- DFIRM mapping files prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*; DFIRM database files prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM , including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of the DFIRM panels showing all the details at the scale(s) agreed upon in the "Scope of Project;" and
- A QA/QC report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRM.

Activity 12B - Independent QA/QC Review of DFIRM Graphics

This activity is not applicable.

Activity 13 – Preparation and Issuance of Preliminary FIS and DFIRM

Responsible Entity: Mapping Coordination Contractor

Scope: This Activity consists of the final preparation, review, and distribution of the Preliminary copies of the FIRM and FIS report for community and public review and comment. The activities to be performed are summarized below.

- *FIS Report Preparation:* Unless instructed otherwise by FEMA, the Mapping Coordination Contractor will prepare the revised FIS report in the format of the existing FIS report, revising the report only to reflect current conditions and include updated data tables and flood profiles. At a minimum, the FIS report will include the following: text; cover; vicinity map; data tables; photographs (if available); flood profiles; floodway schematic; and, when necessary, transect schematic and transect location map.
- *Quality Assurance/Quality Control:* Final QA/QC review of the FIS report, including all data tables, profiles, and other components of the FIS, as appropriate, and the news release will be conducted. The QA/QC procedures will be consistent with FEMA standards outlined below for this activity.
- *Discrepancy Resolution:* The Mapping Coordination Contractor will be responsible for working with Johnson County, Kansas who is responsible for performing the activities of this project to resolve discrepancies identified during QA/QC.
- *Distribution of Preliminary DFIRM and FIS Report:* The Mapping Coordination Contractor will distribute the preliminary copies of the FIS report and DFIRM to the affected communities, State agencies, and others as identified by FEMA.
- *News Release and Federal Register Notice Preparation:* The Mapping Coordination Contractor will prepare the news release notifications of BFE changes. The news release will summarize newly proposed BFEs, modifications to existing BFEs, and any changes to the community's floodplain management ordinances to be NFIP compliant. Upon completion of a 30-day community comment period and/or final meeting with the community, and upon initiation of the 90-day appeal period, the Mapping Coordination Contractor will arrange for and verify that the news release is published in the prominent newspaper(s) with local circulation within each affected community identified by the community and FEMA. The Mapping Coordination Contractor also will arrange for and verify that a similar notice is published in the *Federal Register*.
- *Preliminary Summary of Map Actions (SOMA) Preparation:* The MCC shall prepare Preliminary SOMAs for all affected communities, if appropriate. The SOMA shall list pertinent information regarding Letters of Map Change that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, the Mapping Coordination Contractor shall make the following products available to FEMA:

- A total of five sets of printed preliminary DFIRMs and FIS reports, including all updated data tables and flood profiles for mailing to the CEO of each community (three sets), the State NFIP Coordinator (one set), the FEMA Regional Office (one set), and others as directed by FEMA;
- Preliminary transmittal letter(s);
- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate;

- Revised DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM;
- DFIRM database files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- ESRI Plot file for each panel;
- Metadata files describing the DFIRM data, including the required information as presented in the examples shown in FEMA's DFIRM Specifications;
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the preliminary copies of the DFIRM and FIS report;
- Documentation showing that the news release(s) was published correctly in accordance with FEMA requirements and that a similar notice was published correctly in the *Federal Register* in accordance with FEMA requirements.

Activity 14 - Post-Preliminary Processing

Responsible Entity: Mapping Coordination Contractor

Scope: This Activity consists of finalizing the DFIRM and FIS report after the preliminary FIS and DFIRM have been issued for public review and comment. The activities to be performed include:

Participating in Public Meetings: When FEMA holds public meetings to present and discuss the results of this Flood Map Project, Johnson County, Kansas shall attend the meetings and assist FEMA in the presentation as required.

Initiation of Statutory 90-Day Appeal Period: When required, upon completion of a 30-day community comment period and/or final coordination meeting with the affected communities, the Mapping Coordination Contractor shall arrange for and verify that the following activities are completed in accordance with the current version of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* and *Document Control Procedures Manual*:

- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- News release notifications of BFE changes are published in prominent newspapers with local circulation.
- The appropriate notices (Proposed Rules) are published in the *Federal Register*.

Resolution of Appeals and Protests: Mapping Coordination Contractor shall support FEMA in reviewing and resolving appeals and protests received during the 90-day appeal period. For each appeal and protest, the following activities shall be conducted as appropriate:

- Initial processing and acknowledgment of submittal;
- Technical review of submittal;
- Preparation of letter(s) requesting additional supporting data;
- Performance of revised analyses; and
- Preparation of a draft resolution letter and revised DFIRM and FIS report materials for FEMA review.

The Mapping Coordination Contractor shall mail all associated correspondence upon authorization by FEMA.

Preparation of Special Correspondence: Mapping Coordination Contractor shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as "special correspondence"), including drafting responses for FEMA review when appropriate and finalizing responses when requested by FEMA. The Mapping Coordination Contractor also shall mail the final correspondence (and enclosures if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA.

Revision of FIRM and FIS Report: If necessary, the Mapping Coordination Contractor shall work together to revise the DFIRM and FIS report at the direction of the FEMA Regional Project Officer and distribute Revised Preliminary copies of the DFIRM and FIS report.

Final SOMA Preparation: The Mapping Coordination Contractor shall prepare Final SOMAs for the affected communities as appropriate.

Processing of Letter of Final Determination: The Mapping Coordination Contractor shall work with FEMA to establish the effective date for the DFIRM and FIS report, and shall prepare a Letter of Final Determination (LFDs) for each affected community for FEMA review in accordance with the FEMA *Document Control Procedures Manual*. The Mapping Coordination Contractor also shall mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs and enclosures upon receipt of authorization from FEMA.

Processing of Final DFIRM and FIS Report for Printing: The Mapping Coordination Contractor shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to the FEMA Map Service Center for printing by the U.S. Government Printing Office. The Mapping Coordination Contractor also shall prepare the appropriate paperwork to accompany the DFIRM and FIS report (including Print Processing Worksheet, Printing Requisition Forms, and Community Map Actions Form) and transmittal letters to the community CEOs.

Revalidation Letter Processing. The Mapping Coordination Contractor shall prepare and distribute letters to the community CEOs and floodplain administrators to notify the affected communities about Letters of Map Change for which determinations will remain in effect after the DFIRM and FIS report become effective.

Archiving Data: The Mapping Coordination Contractor shall ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until they are transmitted to the FEMA Engineering Study Data Package Facility.

Standards: All work under Activity 14 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners* and the requirements documented in Section 1 and Appendix A of the FEMA *Document Control Procedures Manual* Mapping Coordination Contractor shall make the following products available to FEMA:

- Documentation that the news releases were published in accordance with FEMA requirements;
- Documentation that the appropriate *Federal Register* notices (Proposed and Final Rules) were published in accordance with FEMA requirements;
- Draft and final Special Correspondence (and all associated enclosures, backup data, and other related information) for FEMA review and signature as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated enclosures, backup data, and other related information) for FEMA review and signature as appropriate;
- Draft and final LFDs (and all associated enclosures, backup data, and other related information) for FEMA review and signature;
- DFIRM negatives and final FIS report materials, including all updated data tables and Flood Profiles;
- Paperwork for the final DFIRM and FIS report materials;
- Transmittal letters for the printed DFIRM and FIS report;
- Letter of Map Change Revalidation Letters if appropriate; and
- Complete, organized archived technical and administrative support data

2. Technical and Administrative Support Data Submittal: The Project Team members for this project that have responsibilities for activities included in this Mapping Activity Statement shall comply with the following data submittal requirements:

- Supporting documentation for the activities in this Mapping Activity Statement shall be submitted in accordance with Appendix M, Section M.2.1 of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, prepared by FEMA, dated April 2003, and subsequent revisions. The following table indicates the sections of the TSDN that apply to each activity.

Section of TSDN	TSDN—Applicable Sections													
	Activities													
	1	2	3	4,	5,	6	7	8, 8A, 8B	9	10	11, 11A	12, 12A, 12B	13	14
General Documentation														
Special Problem Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Telephone Conversation Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Meeting Minutes/Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General Correspondence	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Engineering Analyses														
Hydrologic and Hydraulic Analyses	X	X		X	X	X	X	X	X					
Key to Cross-section Labeling and Key to Transect Labeling	X			X	X	X	X	X	X					
Draft FIS Report				X	X	X	X							
Mapping Information		X						X	X	X	X	X	X	X
Miscellaneous Reference Materials	X	X	X	X	X	X	X	X	X	X	X	X	X	X

- If any issues arise that could affect the completion of an activity within the proposed scope or budget, the party responsible for that activity must complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR should describe the issue and propose possible resolutions. (For additional information on SPRs, refer to Appendix M, Subsection M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*.)

Additionally, the Mapping Coordination Contractor will be responsible for collecting and maintaining a set of products for all Activities and shall compile a comprehensive TSDN for the entire project.

- 3. Period of Performance:** The mapping activities outlined in this MAS will begin on February 1999 and shall be completed no later than October 2006 (this assumes 2 years to complete the study and 2 years to process it thru FEMA). The Mapping Activities may be terminated at the option of FEMA or Johnson County, Kansas in accordance with the provisions of the April 19, 2001 CTP Partnership Agreement.
- 4. Funding/Cost-Sharing:** Johnson County shall provide the funding for activities to be completed by Johnson County. FEMA will provide funding to the Mapping Coordination Contractor for activities to be completed by the Mapping Coordination Contractor.
- 5. Standards:** Table 5-1 indicates the standards and documentation relevant to this Mapping Activity Statement. Table 5-2 shows the applicable sections of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* for each activity.

Table 5-1 Applicable Standards per Activity

Applicable Standards	Activities													
	1	2	3	4, 4A	5, 5A	6	7	8, 8A, 8B	9	10	11, 11A	12, 12A, 12B	13	14
<i>Guidelines and Specifications for Flood Hazard Mapping Partners</i> , April 2003, and subsequent revisions	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American Congress on Surveying and Mapping (ACSM) procedures	X	X	X											
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-58), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	X	X	X											
EM 1000-1-1000, "Photogrammetric Mapping," March 31, 1993	X	X	X											
EM 1110-2-1003, "Hydrographic Surveys," October 31, 1994	X		X											
Numerical Models Accepted by FEMA for NFIP Usage, January 11, 2002				X	X	X	X							
<i>Content Standards for Digital Geospatial Metadata</i> (Federal Geographic Data Committee, 1998)		X	X					X	X	X	X	X	X	X
<i>Document Control Procedures Manual</i> dated December 2000.													X	X

Table 5-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners

Activity Number	Task Description	Applicable Volume, Section/Subsection, and Appendix of Guidelines and Specifications
1	Field Surveys and Reconnaissance	Volume 1, Sections 1.2, 1.3, 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.5, A.6, A.7, and A.8 Appendices B, C, and M
2	Topographic Data Development	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.2 and A.3 Appendix M
3	Independent QA/QC of Topographic Data	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.1) Appendix A, Sections A.2, A.3, A.7 (specifically Subsection A.7.5), and A.8 (specifically Subsection A.8.6) Appendix M
4	Hydrology	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix C, Sections C.1 and C.7 Appendices E, F, G, H, and M
5	Independent QA/QC Review of Hydrology	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix C, Section C.2 Appendices E, F, G, H, and M
6	Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Sections C.3 and C.7 Appendices B, E, F, G, H, and M

Table 5-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners (Cont.)

Task Number	Task Description	Applicable Volume, Section/Subsection, and Appendix of Guidelines and Specifications
7	Independent QA/QC Review of Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Section C.5 Appendices B, E, F, G, H, and M
8	Floodplain Mapping (Detailed Riverine Analysis)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C. 4 and C.6 Appendices K, L, and M
8A	Floodplain Mapping (Redelineation Using Effective Profiles and Updated Topographic Data)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.3) Appendices K, L, and M
8B	Floodplain Mapping (Refinement or Creation of Zone A)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M
9	Independent QA/QC Review of Floodplain Mapping	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices D, K, L, and M
10	Base Map Acquisition and Preparation	Volume 1, Sections 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsection 1.4.3) Appendices A and B

Table 5-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners (Cont.)

Task Number	Task Description	Applicable Volume, Section/Subsection, and Appendix of Guidelines and Specifications
11	DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.2) Appendices K, L, and M
11A	Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsection 1.4.3) Appendices K, L, and M
12	Merging of Revised and Non-Revised Information	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) Appendices K and L
12A	Application of DFIRM Graphic Specifications	Volume 1, Section 1.4 (specifically Subsection 1.4.3) Appendices K and L
12B	Independent QA/QC Review of DFIRM Graphics	Volume 1, Section 1.4 (specifically Subsection 1.4.3) Appendices K, L, and M
13	Preparation and Issuance of Preliminary FIS and DFIRM	Volume 1, Sections 1.4 (specifically Subsections 1.4.2 and 1.4.3) and 1.5 (specifically Subsection 1.5.1) Appendices J, K, L, and M
14	Post-Preliminary Processing	Volume 1, Section 1.5 Appendices J, K, L, and M

6. Schedule and Milestones:

Monitoring Information for Contracted Studies (MICS) will be used to report progress for this Mapping Activity Statement. The initial schedule will be established when the Mapping Activity Statement is signed, and the schedule progress will be updated no later than 30 days after the end of each quarter.

If changes to the schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

7. Certification: The following certifications apply to this Mapping Activity Statement (as appropriate):

Activity 1 (Field Surveys and Reconnaissance) and Activity 2 (Topographic Data Development)

- Registered Professional Engineer or Licensed Land Surveyor shall certify topographic information, in accordance with 44 CFR 65.5(c).
- Certification of topographic information by the American Society for Photogrammetry and Remote Sensing is also acceptable.

Activity 10 (Base Map Acquisition and Preparation)

- Community official or responsible party shall provide written certification that the digital data meet FEMA's minimum standards and specifications.
- Responsible Mapping Partner shall provide documentation that the digital base map can be used by FEMA.

Activities 8, 8A, and 8B (Floodplain Mapping) and Activity 11 (DFIRM Production – Non-Revised Areas)

- The DFIRM metadata files shall include a description of the horizontal and vertical accuracy of the DFIRM base map and floodplain information.

Activity 4 (Hydrology), Activity 6 (Hydraulics), and Activities 8, 8A, and 8B (Floodplain Mapping)

- Hydrologic and/or hydraulic analyses and data shall be certified by a Registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.6(f).
- Topographic information shall be certified by a Registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.5(c).
- Any levee systems to be accredited shall be certified in accordance with 44 CFR 65.10(e).

8. Technical Assistance and Resources: Johnson County, Kansas may obtain copies of FEMA-issued LOMCs), archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from the MCC. The MCC may be contacted at 1-877 FEMA MAP (1-877-336-2627). General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 forms, can be downloaded from FEMA's Flood Hazard Mapping website (www.fema.gov/mit/tsd/). Specific technical and programmatic support may be provided through FEMA's MCC; such assistance should be requested through the FEMA MCC Project Officer specified in Section 11 of this Mapping Activity Statement.

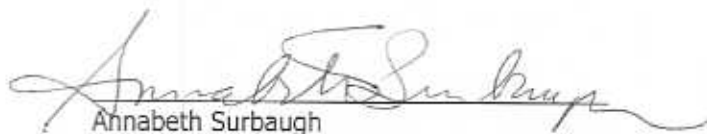
Johnson County, Kansas may also consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or sub-contractors, and GIS-based engineering and modeling training.

9. **Contractors:** Johnson County, Kansas will utilize several contractors for the studies: Blue River (Camp Dresser & McKee); Mill Creek (Burns & McDonnell), Cedar Creek (Black & Veatch), Indian Creek (Phelps Engineering), Northeast (Larkin Group) and Captain/Kill (Camp Dresser & McKee), and Marais des Cygnes River (George Butler Assoc.).

10. **Financial Reporting:** None

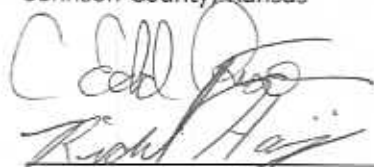
11. **Points of Contact:** The FEMA Regional Project Officer is Bob Franke, and the CTP Project Manager is Kent Lage or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, the assistance of FEMA's MCC should be requested through the FEMA MCC Project Officer, William Blanton.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representative.



Annabeth Surbaugh
Chairman, Board of County Commissioners
Johnson County, Kansas

November 6, 2003
Date



Richard Hainje
Regional Director
Federal Emergency Management Agency

November 6, 2003
Date